

## **ELEMENTAL COMPOSITION OF SOLE OTOLITHS AS A POPULATION DISCRIMINATION TOOL**

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Otolith microchemistry, the study of the minor and trace elemental composition of otoliths (earbones), has been developing rapidly with a wide range of applications in fishery science. This is because otoliths (1) grow continuously, resulting in daily and seasonal structures, (2) have an elemental composition that reflects the environmental concentrations and conditions, (3) are metabolically inert. All of these characteristics make trace element uptake useful for reconstructing environmental histories. The elemental composition is therefore a powerful tool in stock discrimination and connectivity studies.

To study connectivity among North Sea sole (*Solea solea*) populations and to improve our understanding of the relationship between its spawning grounds and nursery areas, genetic markers and otolith microchemistry will be used as complementary discrimination tools. We performed a pilot study to test for differences in sole otolith elemental fingerprints among three sampling locations, using LA-ICPMS. This technique makes it possible to determine composition at discrete points across the otolith (corresponding with different events in the fish's lifetime). A hierarchical design (Basin, Sea, within Sea) enables us to assess the power of this method for the simultaneous large and small scale discrimination of populations.

Preliminary results of this study will be shown and discussed in the light of current European wide research objectives. Future otolith work will focus on enlarging sample size and increasing the number of sampling locations.